

REMARKS

The specification has been amended to correct a patent number. The limitations of original Claim 4 have been incorporated into Claim 1. Claims 3 and 4 have been canceled. Claims 1, 5, 6 and 7 have been amended to more particularly define the invention. New claim 8 has been added. Support may be found in the specification on page 5, lines 22-24; page 7, lines 20-31; page 8, lines 8-12; page 14, lines 19-23; and page 15, lines 26-28.

Claims 1-2 and 5-8 are pending in the application. They stand rejected under 35 U.S.C. 103(a) as being unpatentable over Rajagopalan (U.S. 5,962,140).

The instant invention is directed to fluoropolymer process aids for improvement of the extrusion performance of non-fluorinated melt processable polymers (page 5, lines 22-24). Applicants' invention, as defined in amended Claim 1, is a fluoropolymer process aid composition for use in non-fluorinated melt processable polymers, said composition comprising a fluoropolymer and a polycaprolactone having a number average molecular weight in the range of 2000 to 10000. Polycaprolactone polymers of this number average molecular weight range are waxy materials.

If an elastomer, preferably the fluoropolymer is either a) a copolymer of vinylidene fluoride with a comonomer selected from the group consisting of hexafluoropropylene, chlorotrifluoroethylene, 1-hydropentafluoropropylene, 2-hydropentafluoropropylene and tetrafluoroethylene, or b) a copolymer of tetrafluoroethylene with propylene. If semi-crystalline, preferably, the fluoropolymer is poly(vinylidene fluoride); tetrafluoroethylene homopolymer; a copolymer of tetrafluoroethylene and hexafluoropropylene; or a copolymer of tetrafluoroethylene and propylene.

U.S. 5,962,140 ('140 patent) discloses a golf ball having a core, an intermediate layer and/or a cover comprising a fluoropolymer. Preferably the fluoropolymer is a perfluoropolymer wherein all the C-H bonds have been replaced by C-F bonds. Also, preferably the fluoropolymer contains functional groups such as SO₂F, SO₃H, SO₃M, COF, CO₂F, OH, epoxy, amine, maleate, or ester groups (col. 6, line 58 - col. 9, line 56).

The golf ball layer composition preferably further comprises a second component. Examples of the second component include polyurethane, epoxy resin, polyethylene, polyamide, polyester, or acid copolymers, their derivatives or blends thereof (col. 5, lines 43-47). Among the dozens of specific compounds disclosed (col. 10, line 6 –

col. 15, line 25) which may be employed as the second component are polycaprolactone and poly(urethane-caprolactone).

The '140 patent is silent on the number average molecular weight of the polycaprolactone. However, since golf balls are subjected to very high stresses during play, one may assume that materials employed in golf ball construction must have high toughness and good mechanical properties. Thus, the number average molecular weight of any polycaprolactone employed in a golf ball must be higher than the 2000-10000 M_n waxy polycaprolactone employed in Applicants' invention.

Applicants believe that the '140 patent cannot render the instantly claimed invention obvious for several reasons:

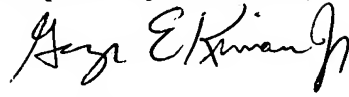
1. Difference between the compositions of the '140 patent and the instantly claimed invention. As mentioned above, the '140 patent's golf ball composition presumably employs a high molecular weight (i.e. >10,000) polycaprolactone in order to provide a material tough enough for incorporation into a golf ball, whereas Applicants' claimed composition employs a relatively low molecular weight, waxy polycaprolactone.

2. Nonanalogous art. One skilled in the art of the extrusion of non-fluorinated melt processable polymers into shaped structures such as tubing, pipe, wire coating or films would not look to the golf ball art for teachings related to fluoropolymer process aid compositions for improving the extrusion performance of melt processable polymers.

3. Impermissible hindsight. The '140 patent discloses dozens of fluoropolymers and dozens of polymer types for the optional second component. There are no teachings or suggestions to combine a fluoropolymer of the type employed by Applicants and a polycaprolactone in order to render Applicants' process aid composition. There is no teaching in the '140 patent that any of the materials presented would be useful in a process aid composition. It is only with prior knowledge of the Applicants' invention, that the examiner was able to pick and chose among the hundreds of combinations of ingredients disclosed in the '140 patent to arrive at Applicants' claimed process aid composition.

In view of the above amendments and remarks, Applicants believe that claims 1, 2 and 5-8 are patentable and that the application is in condition for allowance. Reconsideration is requested.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "George E. Kirvan Jr.", written in a cursive style.

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